

REMARKS

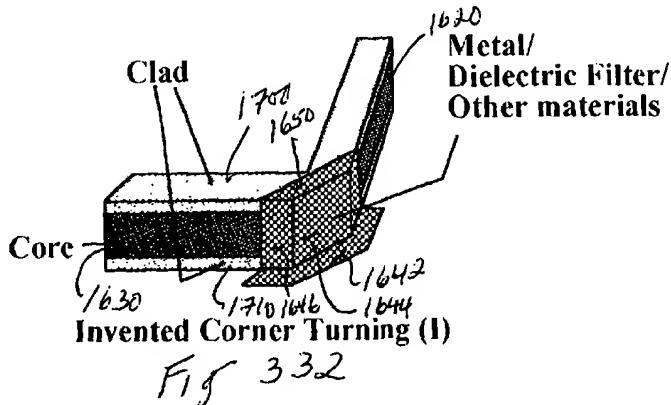
The above amendments are made in response to the first Office Action mailed April 10, 2003, wherein:

1. the drawings were object to;
2. the Abstract was object to for exceeding 150 words;
3. Claims 1-6 were rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 5,438,640 to Sasaki, *et al.*, (the "Sasaki Patent");

In response, the Abstract and Claims have been amended, and corrected drawings have been provided in the form of replacement drawing sheets. These amendments are in compliance with the REVISED MANNER OF MAKING AMENDMENTS procedure described in the M.P.E.P. §714(III). Below, Applicants provide reasons as to why the pending claims, as amended, are allowable over the cited prior art. **Claims 1-6 and new Claim 7 are pending in the application.**

Response to the Rejection of Claims 1 and 3 as Being Anticipated by the Sasaki Patent

Claims 1 and 3 have been amended to more clearly focus the differences between original Claims 5-6 and the Sasaki patent. The amendments to Claims 1 and 3 are supported by FIG. 332 and the description thereof at page 126, line 26-29, as well as other portions of the present application. This figure, which is reproduced below, shows that the optoreflector



(identified as "Metal/Dielectric Filter/Other Materials" in the figure) is disposed on both the beveled planar surface (indicated at 1644) and the adjacent portion of the top surface of the upper cladding layer 1700 (as indicated at 1650). Claims 1 and 3 have been amended to recite the covering of this portion of the upper cladding layer, which improves the performance of the corner turning optical structure. As the amended features of amended Claims 1 and 3 are found in FIG. 332, it is respectfully submitted that the amendments to Claims 1 and 3 do not enter new matter.

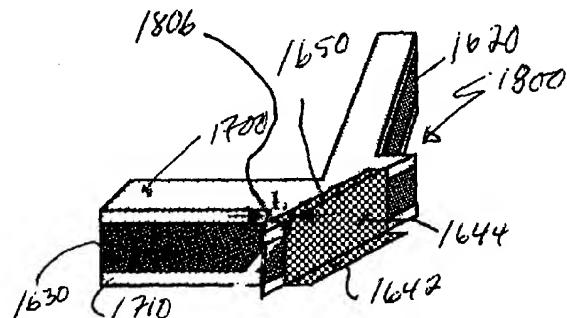
The Office Action has pointed to FIGS. 5-9 and columns 6-8 of the Sasaki patent as anticipating original Claims 1 and 3. However, the Sasaki patent does not teach or suggest the newly-recited feature of the optoreflector being disposed (Claim 1) or deposited (Claim 1) on both the beveled planar surface and a portion of the upper cladding layer that is adjacent to the beveled planar surface. A central aspect of the Sasaki patent is to selectively include half mirrors in sections "B" of its optical layer after the optical layer has been built (Sasaki Patent, column 6, lines 34-66). This is done by etching out a section of the optical layer and thereafter inserting the half mirror (Sasaki Patent, column 8, lines 3-15). Since Sasaki's half-mirror are prefabricated and thereafter inserted into a groove in Sasaki's optical layer, the Sasaki patent does not anticipate the newly-recited features of Claims 1 and 3. Accordingly, it is respectfully submitted that the Sasaki Patent does not anticipate amended Claims 1 and 3.

Moreover, it is respectfully submitted that Claims 1 and 3 are not obvious in view of the Sasaki Patent since there is no direction, suggestion, or motivation in the Sasaki patent to do what is recited by amended Claims 1 and 3.

Response to the Rejection of Claims 2-4 as Being Anticipated by the Sasaki Patent

Claims 2 and 4 have been amended to more clearly focus the differences between original Claims 2 and 4 and the Sasaki patent. The amendments to Claims 2 and 4 more clearly recite the dovetail feature, and are supported by FIGS. 334 and 340, and the description thereof at page 126, line 26 through to page 127, line 5, as well as other portions of the present application. FIG. 334 and a portion of FIG. 340 are reproduced below. As is known in the art, a dovetail has a front surface, a back surface which is wider than the front surface, and two flared side surfaces, with each flared side surface extending from the front surface to the back surface. The dovetail structure is clearly shown in FIG. 344. In the reproduction of FIG. 340, we have outlined the

dovetail structure with gray shading. As can be seen in FIG. 334, core segments 1620 and 1630 have ends which terminate at the front surface of the dovetail structure such that each core segment has its propagation direction at an angle to the propagation direction of the other core segment and at an angle to beveled planar back surface. (Core segments 1676 and 1678 show the same in FIG. 340.)



Invented Corner Turning (II)

FIG 334

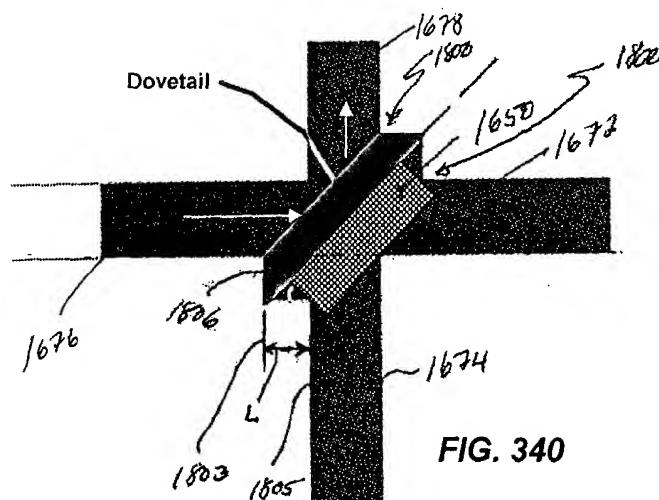


FIG. 340

Claims 2 and 4 have been amended to recite the dovetail structure the covering of this portion of the upper cladding layer, which improves the performance of the corner turning

optical structure. As the amended features of amended Claims 2 and 4 are found in FIGS. 332 and 340, it is respectfully submitted that the amendments to Claims 2 and 4 do not enter new matter.

The Office Action has pointed to waveguide section "C" in FIGS. 6-7 and columns 7-8 of the Sasaki patent as anticipating original Claims 2 and 4. However, the Sasaki patent does not teach or suggest the dovetailed structure, as now more clearly recited. The dovetailed section "C" shown and described by the Sasaki patent does not have the location or the orientation with respect to two angled waveguide core segments, as recited by amended Claims 2 and 4. Accordingly, it is respectfully submitted that the Sasaki Patent does not anticipate amended Claims 2 and 4.

Moreover, it is respectfully submitted that Claims 2 and 4 are not obvious in view of the Sasaki Patent since there is no direction, suggestion, or motivation in the Sasaki patent to do what is recited by amended Claims 2 and 4.

Response to the Rejection of Claims 5-6 as Being Anticipated by the Sasaki Patent

Claims 5 and 6 have been amended to more clearly focus the differences between original Claims 5-6 and the Sasaki patent. The amendments to Claims 5 and 6 are supported by FIGS. 187 and the description thereof at page 120, line 7 through to page 121, line 13, as well as other portions of the present application. It is respectfully submitted that the amendments to Claim 5 and 6 do not enter new matter. With these amendments, it is clear that the optical layers, with their respective segments of waveguide core material, are disposed parallel to one another, and that the columns of waveguide core material run perpendicular to the surfaces of the optical layers.

The Office Action has pointed to FIGS. 13-16 of the Sasaki patent as anticipating original Claims 5 and 6. However, the segments A-C of waveguide core material shown in these figures are formed entirely within one optical layer. Two different cross-sections of this one optical layer are shown in FIGS. 8 and 9, one at a section of narrow core width and the other at a section of wider core width, as explained at column 7, lines 56-63 of the Sasaki patent. The Sasaki patent does not teach or suggest columns of waveguide material that run perpendicular to the surfaces of two optical layers disposed on top of one another. Accordingly, it is respectfully submitted that the Sasaki Patent does not anticipate amended Claims 5 and 6.

A central aspect of the Sasaki patent is to selectively include half mirrors in sections "B" of its optical layer after the optical layer has been built (Sasaki Patent, column 6, lines 34-66). This is done by etching out a section of the optical layer and thereafter inserting the half mirror (Sasaki Patent, column 8, lines 3-15). This insertion process would not work if two optical layers were disposed on top of one another since laser etching to the bottom optical layer would destroy waveguide core segments in the top optical layer. In addition, the Sasaki patent does not disclose an insertable half-mirror which can direct light vertically out of the optical layer. For these reasons, it is respectfully submitted that it would not be obvious to modify the Sasaki patent in order to meet the limitations of Claims 5 and 6.

Support for New Claim 7

New Claim 7 is dependent upon Claim 1 and recites that a portion of the side surface of the waveguide core is adjacent to the beveled planar surface, and that the optoreflector is further disposed on the adjacent portion of the waveguide core's side surface. These features are shown in FIG. 332 (reproduced above) where section 1646 of the optoreflector (identified as "Metal/Dielectric Filter/Other Materials" in the figure) is disposed on a side of waveguide core 1630. Accordingly, it is respectfully submitted that new Claim 7 does not enter new matter.

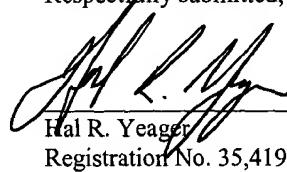
CONCLUSION

In view of the remarks made above, Applicants respectfully submit that the application is in condition for allowance and action to that end is respectfully solicited. If the Examiner should feel that a telephone interview would be productive in resolving issues in the case, he is invited to telephone the undersigned at the number listed below.

August 11, 2003

Respectfully submitted,

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Attachments